



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
RESEARCH TRIANGLE PARK, NC 27711

OCT 25 2013

OFFICE OF  
AIR QUALITY PLANNING  
AND STANDARDS

Mr. Brian McCarter  
MuckRock News  
Department MR 133  
P.O. Box 55819  
Boston, Massachusetts 02205-5819

Re: Your Freedom of Information Request - EPA-HQ-2013-010310

Dear Mr. McCarter:

This letter is in response to your Freedom of Information Request of September 25, 2013, regarding the models used to calculate the benefits, social costs, and net benefits for the final Mercury and Air Toxics Standards (MATS). Below you will find information on how the U.S. Environmental Protection Agency calculated each component of Table 2 in the February 16, 2012 Federal Register notice ("Summary of the Monetized Benefits, Social Costs, and Net Benefits for the Final Rule in 2016").

#### **Total Monetized Benefits**

The total monetized benefits are calculated by adding together the monetized mercury-related benefits, fine particulate (PM<sub>2.5</sub>) related co-benefits, and climate-related co-benefits.

#### **Mercury-related Benefits**

The EPA's analysis of mercury-related health impacts focused on exposures to methylmercury in populations that consume self-caught freshwater fish (recreational fishers and their families). The estimated monetized benefits for reductions in mercury emissions reflect the value of avoided IQ loss in this subset of the population.

The estimated monetized benefits are based on scientific literature on the relationships between mercury deposition and methylmercury fish tissue concentrations, prenatal mercury exposure and IQ, and IQ and potential earnings. Chapter 4 of the MATS Regulatory Impact Analysis (RIA)<sup>1</sup> describes in detail the data and processes used to calculate the mercury-related health benefits.

The data underlying this analysis has been placed in the docket for the final rulemaking (Docket ID EPA-HQ-OAR-2009-0234-13662) and can be requested from the EPA Docket Office.<sup>2</sup>

<sup>1</sup> <http://www.epa.gov/ttn/ecas/regdata/RIAs/matsriafinal.pdf>

<sup>2</sup> Environmental Protection Agency, Docket Center, 1301 Constitution Ave NW, 2822T, Room 3334, Washington, DC. 20004; Telephone: 202-566-1744; Fax: 202-566- 9744; Email: [docket-customerservice@epa.gov](mailto:docket-customerservice@epa.gov)

### **PM<sub>2.5</sub>-related Co-benefits**

The EPA estimated the PM<sub>2.5</sub>-related health co-benefits of SO<sub>2</sub> and direct PM emissions changes for the final MATS. The EPA developed benefit per ton (BPT) estimates based on air quality changes under a representative interim policy scenario and applied these BPT estimates to the emission changes for the final rule. These methods are described in detail in Chapter 5 and Appendix 5C of the MATS RIA and summarized briefly as follows.

We first simulated air quality changes resulting from the emission reductions expected under the representative interim policy using the Community Multiscale Air Quality (CMAQ) model. We then calculated the health benefits across the U.S. resulting from those air quality changes using BenMAP version 4.0.43.<sup>3</sup> Next, we divided the estimated health benefits of the interim policy by the reductions in SO<sub>2</sub> and directly emitted PM<sub>2.5</sub> resulting from the interim policy to generate BPT values for SO<sub>2</sub> and directly emitted PM<sub>2.5</sub>. We generated BPT values separately for the Eastern and Western U.S. These BPT values were multiplied by the emission reductions expected under the final rule to estimate the health benefits of the final rule, as reported in Table 2 of the Federal Register notice and throughout the RIA.

BPT values for the analysis year of 2016 were generated in BenMAP using population projected to 2016 and baseline incidence rates projected to 2015 (the closest year for which projections were available), as described in the RIA. Note that the version of BenMAP used to generate the BPT estimates predates data from the 2010 U.S. Census, and instead used 2000 Census data to project population and baseline incidence to 2016. The version of BenMAP currently available now uses 2010 Census data to project population and baseline incidence, and also includes slight changes in county definitions. We expect that these differences would not have a material effect on the benefits results.

Table 5C-3 of the MATS RIA provided BPT estimates used to estimate benefits of the final rule for adult mortality. In response to this FOIA request, the EPA is providing the BPT estimates for all health outcomes and the air quality surfaces used to generate those BPT estimates in BenMAP version 4.0.43. Regenerating BPT estimates using the current version of BenMAP would result in slight differences due to the data changes in BenMAP described above.

### **Climate-related Co-benefits**

To estimate the climate-related co-benefits of the final MATS, the EPA multiplied the decrease in CO<sub>2</sub> that is projected to occur as a result of the policy by the per-ton social cost of carbon (SCC) value for the year of analysis. The SCC is a metric that estimates the monetary value of impacts associated with marginal changes in CO<sub>2</sub> emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change. It is typically used to assess the avoided damages, i.e. benefits, of rulemakings that achieve marginal reductions in CO<sub>2</sub> emissions.

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<sup>3</sup> EPA's BenMAP computer modeling program is a tool for estimating the health impacts, and associated economic values, associated with changes in ambient air pollution. This tool has been used widely and peer-reviewed extensively. BenMap may be accessed on the web at <http://www.epa.gov/airquality/benmap/index.html>.

Climate benefits for the analysis year of 2016 were calculated using the SCC values for 2015 (the closest year for which projections were available). This analysis was based on the SCC values published in 2010.<sup>4</sup> Recalculating the climate co-benefits using the SCC values published in 2013<sup>5</sup> would increase the climate co-benefits associated with the final MATS.

### **Total Social Costs**

The total social costs for the final MATS were approximated using the compliance costs calculated using the Integrated Planning Model (IPM). The EPA uses IPM to analyze the impact of air emissions policies on the U.S. electric power sector. IPM is a proprietary model owned by ICF International, a private consulting firm. EPA uses the model and develops its own set of assumptions to support its regulatory actions, and makes those inputs to and outputs from IPM publicly available. Documentation, model results, and databases associated with IPM analysis for the final MATS are available on the EPA website.<sup>6</sup> IPM can be used by any interested party, with published EPA assumptions and data if desired, by contacting ICF International.<sup>7</sup>

### **Net Benefits**

The net benefits of the final MATS were calculated by subtracting the total social costs from the total monetized benefits.

You may appeal this response to the National Freedom of Information Officer, U.S. EPA, FOIA and Privacy Branch, 1200 Pennsylvania Avenue, N.W. (2822T), Washington, DC 20460 (U.S. Postal Service Only), Fax: (202) 566-2147, E-mail: [hq.foia@epa.gov](mailto:hq.foia@epa.gov). Only items mailed through the United States Postal Service may be delivered to 1200 Pennsylvania Avenue, NW. If you are submitting your appeal via hand delivery, courier service or overnight delivery, you must address your correspondence to 1301 Constitution Avenue, NW, Room 6416J, Washington, DC 20001. Your appeal must be made in writing, and it must be submitted no later than 30 calendar days from the date of this letter. The Agency will not consider appeals received after the 30 calendar day limit. The appeal letter should include the FOI listed above. For quickest possible handling, the appeal letter and its envelope should be marked "Freedom of Information Act Appeal."

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<sup>4</sup> Available on the web at <http://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>.

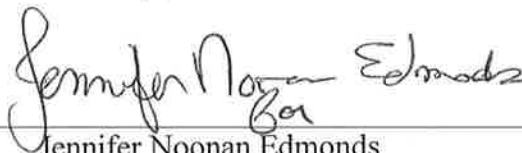
<sup>5</sup> Available on the web at [http://www.whitehouse.gov/sites/default/files/omb/inforeg/social\\_cost\\_of\\_carbon\\_for\\_ria\\_2013\\_update.pdf](http://www.whitehouse.gov/sites/default/files/omb/inforeg/social_cost_of_carbon_for_ria_2013_update.pdf).

<sup>6</sup> <http://epa.gov/airmarkets/progsregs/epa-ipm/toxics.html>

<sup>7</sup> <http://www.icfi.com>

I appreciate the opportunity to be of service and trust the information provided is helpful.

Sincerely,

A handwritten signature in black ink, reading "Jennifer Noonan Edmonds". The signature is written in a cursive style with a large initial "J".

Jennifer Noonan Edmonds

Director

Policy Analysis and Communications Staff

Enclosures

## List of Files Provided

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### Benefit per Ton Estimates

MATS benefit per ton estimates.xls

### Air Quality Modeling Surfaces

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MATS baseline SO4.aqg

MATS control SO4.aqg

MATS baseline ECOC.aqg

MATS control ECOC.aqg

MATS baseline crustal.aqg

MATS control crustal.aqg

